

Lookingglass Creek Salmonid Evaluation Studies

Lower Snake River Compensation Plan

Statement of Work Task Completion Summary for
October 1, 2010 through September 30, 2011

Prepared by

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Objective 1. Describe life history of juvenile spring Chinook salmon in Lookingglass Creek in order to evaluate supplementation success.

Task 1.1. Check the rotary screw traps every 2-3 days or more frequently if needed and enumerate, examine for marks, and interrogate for PIT tags all juveniles collected.

Status: Complete (Table 1). Trap was checked 2-3 times per week but increased during high flows, heavy debris loads, and during extreme temperatures. A total of 132 trap checks occurred during October 1, 2010 and September 30, 2011.

Month/Year	# Trap Checks	PTAGIS Files Loaded	CHS PIT- tagged/clipped	Genetics Samples Taken
Oct 2010	19	19	391/0	220
Nov 2010	17	15	103/97	145
Dec 2010	9	9	10/76	53
Jan 2011	5	4	12/0	0
Feb 2011	12	8	46/4	0
Mar 2011	14	14	209/140	140
Apr 2011	4	3	37/0	0
May 2011	4	3	2/0	0
Jun 2011	8	7	0/91	0
July 2011	14	14	63/183	38
Aug 2011	13	13	141/78	66
Sep 2011	13	13	295/220	82

Table 1. Number of trap checks, files uploaded to PTAGIS, Number of Chinook and Steelhead tagged or clipped and number of genetics samples taken from Chinook from October 1, 2010 to September 30, 2011.

Task 1.2. Mark (PIT tag and/or fin clip) and release at least 50 fish per week for estimating trapping efficiency.

Status: Complete (Table 1). Between October 1, 2010 and September 30, 2011, a total of 2,198 juvenile Chinook were marked and 1,051 juvenile steelhead, respectively.

Task 1.3. Collect and preserve genetics samples from 250 juveniles throughout the run.

Status: Complete. CRITFC informed CTUIR that we should sample genetics from at least 2-3 times the number of spawners per brood year. See Table 1.

Task 1.4. PIT tag and release at least 500 fish collected in the screw trap for each season of the migration year (fall, winter, spring).

Status: Complete, except for spring 2011. Between October 1, 2010 to December 31, 2010 (winter group) 504 juvenile Chinook were tagged and released. Between January 1,

2011 and June 30, 2011 (spring group) 306 juvenile Chinook were tagged. Our trap was pulled during much of the spring due to extremely high flows.. Between July 1, 2011 and September 30, 2011 (fall group) 499 juvenile Chinook were tagged and released.

Task 1.5. PIT tag and release 1,000-1,500 spring Chinook salmon parr captured by snorkel seining in the primary nursery area above the Lookingglass Hatchery trap

Status: Complete, but 54 fish short of goal. CTUIR collected 946 spring Chinook parr. Higher than normal flows in the spring and summer made collection more difficult this year, as well as a small staff. Parr were not located in historical nursery areas, and collection was moved upstream where we were much more successful.

Task 1.6. Collect and sample fork length and weight for 50 parr per month at standard sites above and below the hatchery weir.

Month	Rkm 0.7	Standard Site	Vern+Linda's
July	52	38	59
August	51	46	50
September	0	0	0

Table 2. Monthly collection sites for Lookingglass Creek separated by site. Collection always took place on or near the 25th date of the month at each of the three sites, whenever possible.

Status: Partial completion. July 25th, 2011 and August 26, 2011 collection was completed, although in September there were many adult Chinook redds in sample areas that would have made parr collection potentially result in damage to redds and buried eggs. CTUIR has not encountered this problem thus far, as adult fish numbers remained low. Our numbers have grown substantially and this will have to be a consideration as we work with ESA-listed species in the future.

Task 1.7. Estimate migration timing out of Lookingglass Creek and migration timing and survival to Lower Granite for fish PIT-tagged after capture at the screw trap and PIT-tagged in the nursery area (Task 1.5).

Status: Preliminary estimates of outmigration timing from Lookingglass Creek and survival to and arrival timing at Lower Granite have been completed for the field 2010, fall 2010, winter 2010, and spring 2011 groups of MY 2011 spring Chinook salmon.

Table 1 below shows the most recent migration timing and survival estimates to Lower Granite Dam available.

Table 1. Survival probabilities, travel time, and arrival timing summary by group for

natural-origin BY 2008 spring Chinook salmon caught in the Lookingglass Creek screw trap, PIT-tagged and released.

Statistic	Group			
	Summer 2009	Fall 2009	Winter 2009	Spring 2010
Survival Probability	0.161	0.291	0.266	0.596
SE	0.023	0.098	0.044	0.071
N	1,338	851	676	573
Travel Time (d)				
Harmonic Mean	274.8	228.9	184.4	37.4
SE	1.4	2.9	2.5	2.0
N	39	29	39	81
Arrival Date				
10%	4/24/2010	4/22/2010	4/24/2010	4/28/2010
Median	5/3/2010	4/27/2010	4/28/2010	5/14/2010
90%	5/18/2010	5/10/2010	5/9/2010	5/25/2008
N	44	29	39	81
N (expanded)	73	48	62	123

Task 1.8. Upload all PIT tag data to PTAGIS for inclusion in their database.

Status: Completed. Each week all files were uploaded to PTAGIS to keep the database current. Between October 1, 2010 and September 30, 2011 a total of 112 files have been uploaded to the PTAGIS database. See Table 1.

Task 1.9. Compare life history metrics (outmigrant abundance, outmigration timing, growth, condition factor, and survival and arrival timing to Lower Granite Dam) between the endemic stock, current natural- and hatchery-origin outmigrants, discontinued non-endemic stocks, and natural-progeny of other supplemented Grande Ronde Basin stocks.

Status: Comparisons using the latest complete data for the most recent migration year (or run year (2010) are possible and will be included in the combined 2009-2010 annual report. Comparisons using run year 2011 will be included in the 2011 annual report.

Table 2 below is the most recent outmigrant abundance data available.

Table 2. Naturally-produced BY 2008 juvenile spring Chinook salmon caught in the

Lookingglass Creek rotary screw trap, releases and recaptures from trap efficiency tests, estimated number of outmigrants and SE, MY (migration year) 2010 (July 2009-June 2010).

Period	u	m	r	C _p	N
July 2009	60	43	2	0.117	515
August	274	215	32	0.117	2,351
September	1,159	595	201	0.338	3,431
October	2,223	431	26	0.058	38,105
November-December	775	245	20	0.082	9,494
January-February	103	79	15	0.132	780
March	976	315	88	0.307	3,174
April-June 2010	444	182	31	0.170	2,607
MY 2010 Total (SE)	60,456 (8,091)				

Task 1.10. Compare productivity metrics (smolts/redd, smolt-to-adult ratios) between the extirpated endemic stock, current natural- and hatchery-origin returns, discontinued non-endemic stocks, and natural returns of other supplemented Grande Ronde Basin stocks.

Status: Comparisons using the latest complete data for the most recent migration year (or run year (2010) are possible and will be included in the combined 2009-2010 annual report. Comparisons using run year 2011 will be included in the 2011 annual report.

Objective 2. Describe life history and production of adult spring Chinook salmon in Lookingglass Creek in order to evaluate supplementation success.

Task 2.1. Obtain data and tissues (FL, sex, marks/tags, scales, genetics samples) from Lookingglass Hatchery staff for all spring Chinook salmon collected at the adult trap and carcasses recovered on spawning ground surveys.

Status: Data/tissues were obtained for 1,167 hatchery-origin and 167 natural-origin collected from June 1, 2011-September 7, 2011. Most of the hatchery fish were killed or recycled downstream for the tribal harvest. These fish are included in the above numbers. On July 12, 2011 CTUIR outplanted 174 Chinook above the weir. After that date, fish were passed upstream in "real time" as they swam into the adult ladder trap. An additional 331 Chinook were passed upstream. The total number outplanted was 505 above the weir in 2011. The remaining adult fish were held for conventional broodstock.

Task 2.2. Conduct spawning ground surveys throughout the stream once a week during the spawning season, enumerating redds and logging locations with GPS and collecting carcass data and tissues.

Status: Completed. The large numbers of adult returns to Lookingglass Creek made for long days on spawning ground surveys. CTUIR collected data from 563 carcasses from

August 8, 2011 to September 20, 2011 and enumerated and took GPS points for 341 redds during that time. Surveys by unit were unit 1(7), unit 2(8), unit 3L (7), unit 3U (4), and unit 4(5) for a total of 31 surveys,

Task 2.3. Age fish using scales or coded wire tags.

Status: Partial Completion. The most recent scale data available is for run year 2009. Approximately 55 natural-origin fish from run year 2010 are left to be aged, and will be completed the week of December 26, 2011. CWT data through run year 2010 are available from PSMFC RMIS. Spring Chinook salmon scales for 2011 have been mounted, but not pressed or read. Snouts were sent out October 14, 2011 with all accompanying data for 343 snouts. All 2011 snouts were checked for a CWT prior to being shipped, and were not sent if no CWT was present.

Task 2.4. Estimate total redds, redd distribution, fish/redd, sex ratio, age composition, run timing, spawn timing, total escapement, and length frequency of adults, and progeny-per-parent ratios.

Status: Data are in spreadsheets. Preliminary estimates are available for total redds, redd distribution, sex ratio, spawn timing and length frequency of adult spawners above the weir.

Task 2.5. Reconstruct run size and characteristics from adult and juvenile data.

Status: Preliminary estimates of spawners above the weir have been made for jacks (age 3) and adults (ages 4/5).

Task 2.6. Estimate progeny-per-parent for brood year 2006 natural and hatchery-origin adults.

Status: The estimate of natural-origin brood year 2005 is complete (1.69). An estimate of natural-origin brood year 2006 recruits-per-spawner (aka progeny-per-parent) has not been completed. The end of the contract period (September 30) does not allow time for completion of brood year 2006 recruits-per-spawner using age 5 returns. The hatchery-origin BY 2006 recruits-per-spawner is the responsibility of ODFW.

Task 2.7. Compare adult life history metrics (run and spawn timing, redd distribution, sex ratio, age composition, length-at-age, pre-spawning mortality, egg size) between the extirpated endemic stock, current natural- and hatchery-origin returns, discontinued non-endemic stocks, and natural returns of other supplemented Grande Ronde Basin stocks.

Status: Completion of these tasks await estimation of adult metrics for run year 2011.

Task 2.8. Compare adult productivity metrics (progeny-per-parent, fecundity) between the extirpated endemic stock, current natural- and hatchery-origin returns, discontinued

non-endemic stocks, and natural returns of other supplemented Grande Ronde Basin stocks.

Status: Comparisons using the latest complete data for the most recent run year (2010) are possible and will be included in the combined 2009-2010 annual report. Comparisons using run year 2011 will be included in the 2011 annual report.

Objective 3. Determine if there are negative artificial propagation effects of utilizing Catherine Creek stock F₁ generation captive broodstock returns as broodstock in Lookingglass Creek.

Task 3.1. Compare life history, survival and production metrics of Catherine Creek stock F₁ generation conventional broodstock (derived from conventional and wild crosses) versus Catherine Creek stock F₁ generation captive broodstock that are used for conventional broodstock in Lookingglass Creek.

Status: Comparisons using the latest complete data for the most recent run year (2010) are possible and will be included in the combined 2009-2010 annual report. Comparisons using run year 2011 will be included in the 2011 annual report.

Task 3.2. Compare life history, survival and production metrics of Catherine Creek stock F₁ generation captive broodstock returns utilized to spawn in the wild (Catherine Creek program or adult outplants to Lookingglass Creek) versus F₂ generation which are utilized to spawn in the wild (Lookingglass program utilizes F₁ captive broodstock returns as broodstock then F₂ returns spawn in the wild).

Status: No progress on this task.

Objective 4. Describe life history and production of native summer steelhead (*O. mykiss*) in Lookingglass Creek in order to improve our biological knowledge of this species.

Task 4.1. PIT-tag and release 500 juvenile *O. mykiss* collected in the screw trap during the fall (September-November) and spring (April-June) migration seasons.

Task 4.2 Mark and release at least 50 juvenile *O. mykiss* collected in the screw trap during each week for trap efficiency.

Task 4.3. Collect FL, weight, mark/tag, smolt condition and injury data from all juvenile *O. mykiss*.

Task 4.4. Obtain FL, mark/tag, sex, maturity status, and scales for adult summer steelhead collected at the trap from ODFW staff.

Task 4.5. Summarize FL, weight, condition factor, outmigration timing, arrival timing and survival to Lower Granite Dam for outmigrating juveniles.

Task 4.6. Assign ages to fish sampled for scales.

Status: Tasks 4.1-4.6 were shifted to the 2011 BPA Contract (CTUIR Project 413, BPA Project 2007-083-00).

Task 4.7. Summarize FL, arrival timing, mark/tag status, hatchery/wild ratio, age composition, sex ratio, and recapture rate for adult summer steelhead.

Status: Preliminary estimates of all metrics with the exception of age composition have been completed. Totals first-time captures of 278 natural-origin adults included captured from March 14-June 13, 2011 (189 F, 89 M). There were 28 recaptures of fish that had been marked and passed above the weir and that fell back over the weir and were recaptured at least once. There were 3 ad-clipped (hatchery-origin) fish that were removed from the stream (1.1% of the total first-time captures).

Task 4.8. Compare adult life history characteristics and production to Lookingglass Creek data collected in the 1960s and 1970s and other A-run Grande Ronde Basin and Snake River Basin stocks.

Status: In progress. Data for other A-run stocks have been obtained from annual reports.

Objective 5. Describe water temperatures for Lookingglass Creek.

Task 5.1. Obtain and summarize water temperature data for any Umatilla National Forest water temperature loggers deployed in Lookingglass Creek or tributaries.

Status: Data has been requested from UNF and will be available in January 2012.

Task 5.2. Collect and summarize water temperature data using Onset data loggers in Little Lookingglass Creek and at the screw trap site.

Status: Completed. CTUIR removed the Little Lookingglass temperature Onset reader October 14, 2011 to prevent it being non retrievable during the winter. It was downloaded on October 27, 2011. The screw trap Onset thermometer was recovered on November 7, 2011. Downloading of data from this older data logger is awaiting installation of software that should take place by December 16, 2011.

Objective 6. Assist comanagers and cooperators in completing related LSRCP/ project tasks.

Task 6.1. Assist ODFW in completing spring Chinook salmon spawning ground surveys in the Grande Ronde Basin.

Status: Completed. CTUIR provided 3 staff each week of the standard surveys for both Catherine Creek and the upper Grande Ronde River during August-September 2011. Data collected included kidney samples for fish health studies as well as genetics samples. Three pre-spawn mortality surveys were completed on the Upper Grande Ronde River. CTUIR also provided one staff member for one day to assist on the Wenaha R. hike-in survey on September 15, 2011.

Task 6.2. Assist ODFW in spawning of spring Chinook salmon broodstock.

Status: Completed. CTUIR provided 2 staff for each of 5 days to collect data from spawning of Catherine, upper Grande Ronde, and Lookingglass stocks. CTUIR assisted in collecting all phases of data.

Task 6.3. Assist ODFW in pre-transfer sampling of juvenile spring Chinook salmon reared at Lookingglass Hatchery.

Status: Completed. CTUIR assisted ODFW in January 2011 with sampling of Catherine, Grande Ronde, and Lookingglass stocks, by providing 1 staff person for 4 days. CWT retention was checked and lengths and weights were taken from a percentage of juveniles.

Task 6.4. Assist ODFW in other LSRCP activities when CTUIR staff and equipment are available.

Status: Completed. CTUIR assists comanagers whenever possible, as long as CTUIR has available staff, time, and equipment. CTUIR assisted ODFW with production PIT tagging at Lookingglass fish hatchery for Catherine Creek stock (21,000 juveniles), Grande Ronde (2,000 juveniles) and Lookingglass Creek stock (1,500 juveniles) from October 3-October 7, 2011. Two staff were provided for each of 5 days.

CTUIR staff also assisted in located equipment (PIT tag reader, CWT reader), and coordinating data and tissue transfer for the CTUIR harvest biologist.

Objective 7. Synthesize and disseminate project information.

Task 7.1. Submit quarterly project reports by the 6th of April, July, October, and January of the contract year.

Status: Task unnecessary, should be deleted.

Task 7.2. Analyze data and synthesize in annual report using standard scientific format.

Status: Underway for contract 2010-2011 data.

Task 7.3. Submit a draft annual project report combining the years 2008-2009 to reviewers by 15 July 2010.

Status: Should have read 2009-2010. Deadline not met. Will submit to CTUIR and LSRCP staff for review by 31 December 2011. The 2008 annual report has been submitted to LSRCP and is available on the LSRCP Publications website.

Task 7.4. Submit final copy of the combined 2009-2010 annual project to LSRCP and managers by 30 September 2010.

Status: If submission for internal review in Task 7.3 takes 1-2 weeks, the final report should be posted on the LSRCP Publications website by the end of January 2012.

Task 7.5. Submit a draft 2010 annual project report to reviewers by 15 April 2011.

Status: This task should have read "draft 2011" and "by 30 June 2012".

Task 7.6. Begin process of making project information and progress available over the Internet.

Status: Completed (ongoing).

Task 7.7. Consult with other professionals to improve project efficiency and work products.

Status: Completed (ongoing).

Task 7.8. Complete final project funding proposal, statement of work and budget by September 1, 2010.

Status: Completed.